Notes on the hawkmoths of the Philippines (Lepidoptera: Sphingidae)

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Abstract: The new species *Macroglossum* ***malitum*** **n. sp.** is described from Palawan Island, Philippines (♂ holotype from southern Palawan in CCGT, assigned to SMFL, no. SMFL 4203). A ♂ of the new species is figured together with its genitalia structures. Also shown for comparison are *Macroglossum faro* (Cramer, 1780) and *Macroglossum passalus* (Drury, 1773) together with their genitalia structures. – For previously recorded sphingid species additional, new distributional data within the Philippines are given.

Keywords: Lepidoptera, Sphingidae, Macroglossinae, *Macroglossum malitum* n. sp., Philippines.

Notizen zu den Schwärmern der Philippinen (Lepidoptera: Sphingidae)

Zusammenfassung: Die neue Art *Macroglossum* ***malitum*** **n. sp.** wird von der Insel Palawan, Philippinen beschrieben (Holotypus ♂ aus dem Süden Palawans in der Sammlung CCGT, welche später in die Sammlung SMFL eingegliedert werden wird; SMFL-Nr. 4203). Ein ♂ der neuen Art und seine Genitalstrukturen werden abgebildet. Durch das dunkle basale Drittel auf der Oberseite des Vorderflügels ähnelt die Art im Habitus nur *Macroglossum faro* (Cramer, 1780) und *Macroglossum passalus* (Drury, 1773), die zum Vergleich ebenfalls abgebildet werden. Eine eindeutige Unterscheidung dieser drei Arten ist nur mittels Genitalstrukturen möglich, die für alle drei Arten illustriert werden: die zwei Cornuti der Vesica sind bei *M. malitum* n. sp. gedrungen und haben eine stumpfe, dreieckige Form, während sie bei den beiden anderen Arten sehr langgestreckt sind und bei *M. passalus* sogar bandförmig und sich krümmend auslaufen. Weiterhin unterscheidet sich *M malitum* durch einen spitz zulaufenden Sacculus der Valve mit keinen bis wenigen Zähnchen und die gerade bis konvexe ventrale Kante der sich distal verjüngenden Valve. – Für von den Philippinen bereits bekannte Sphingidenarten werden zusätzliche, neue Verbreitungsdaten angegeben.

Description of the new species

Initially, specimens of this new species were considered to be *Macroglossum passalus* (Drury, 1773). However, further investigation clearly demonstrated that they stand out as a previously undescribed new species.

Abbreviations:

av.	average
FWL	forewing length
BMNH	The Natural History Museum, London, UK
CAZS	Collection Andreas Zwick, Schlitz, Germany
CCGT	Collection Colin G. Treadaway, Limbach, Germany; assigned to SMFL
CJMC	Collection Jean-Marie Cadiou, Belgium
SMFL	Lepidoptera collection of Senckenberg Museum, Frankfurt am Main, Germany

Macroglossum malitum n. sp.

Holotype: ♂, Philippines, Palawan, Mt. Mantalingahan, abandoned village (Kibaywon) in prim. rainforest, 950 m, 8°46′59.0″N, 117°42′06.7″E, MV lamp, 26.–30. v. 2001 [CCGT, assigned to SMFL, SMFL-no. 4203], Fig. 1.

Paratypes (3 specimens): 1 ♂, same data as holotype, but 16.–19. v. 2001 [CAZS], genitalia preparation CAZS/AZ 196; 2 ♂♂, Philippines, Palawan, Bataraza, Malihud, primary forest 6 km N, hilltop, 730 m, 8°43′54″N, 117°34′04″E, MV lamp, 30./31. v. 2000 [BMNH] & 2. vi. 2000 [CJMC], genitalia preparation CCGT/AZ 135, Figs. 4–5.

Etymology: The species name is derived from the Tagalog word malito, which means confused and describes a mental state as well as something being mistaken for something else – this new species was initially mistaken for *M. passalus*, and the question of its distribution together with the identity of *Rhamphoschisma rectifascia* caused quite some confusion.

Description

♂ (Fig. 1): forewing length, base to apex: 24–26 mm (av. 25 mm; n = 4). Head, thorax and abdomen upperside very dark brown, with a black line running from the tip of the palps to the caudal edge of the thorax. Underside of head white, thorax cream-coloured, and abdomen dark brown with lighter, creamy brown patches on each segment decreasing in size anally. Two smallish yellow lateral spots on each side of the abdomen (tergites II & III with spots on III being somewhat smaller than on II). Ground colour of forewing upperside a slightly mauve tinted dark brown with the basal area filled in with darker scales and with a black antemedian band, which has a straight outer edge. There is a fine, irregularly curving median line with a further pair of similar postmedian lines for both the fore- and hindwing. The hindwing upperside has an irregular dark basal patch, with an orangy yellow band bordered outwardly by a very dark brown, broad sub-marginal band, curving inwardly and reaching a maximum width of 6 mm. Underside of fore- and hindwing sub-marginately dull brown with the remainder of the wings reddish brown. Basally both wings possess a yellow patch but larger and brighter coloured for the hindwing. There is an irregularly curving, fine medial line with a further pair of similar postmedial lines for both the fore- and hindwing. Differing from the distinctive bands on the upperside, the dark lines on both fore- and hindwings for the upper- and underside are rather vague.

♀: unknown.

♂ **genitalia structures:** Genitalia structures (Figs. 4–5) are of the same general type as in other *Macroglossum* species: well developed tegumen, gnathos and simple, hairy uncus; no socii; valva hairy and with a more heavily

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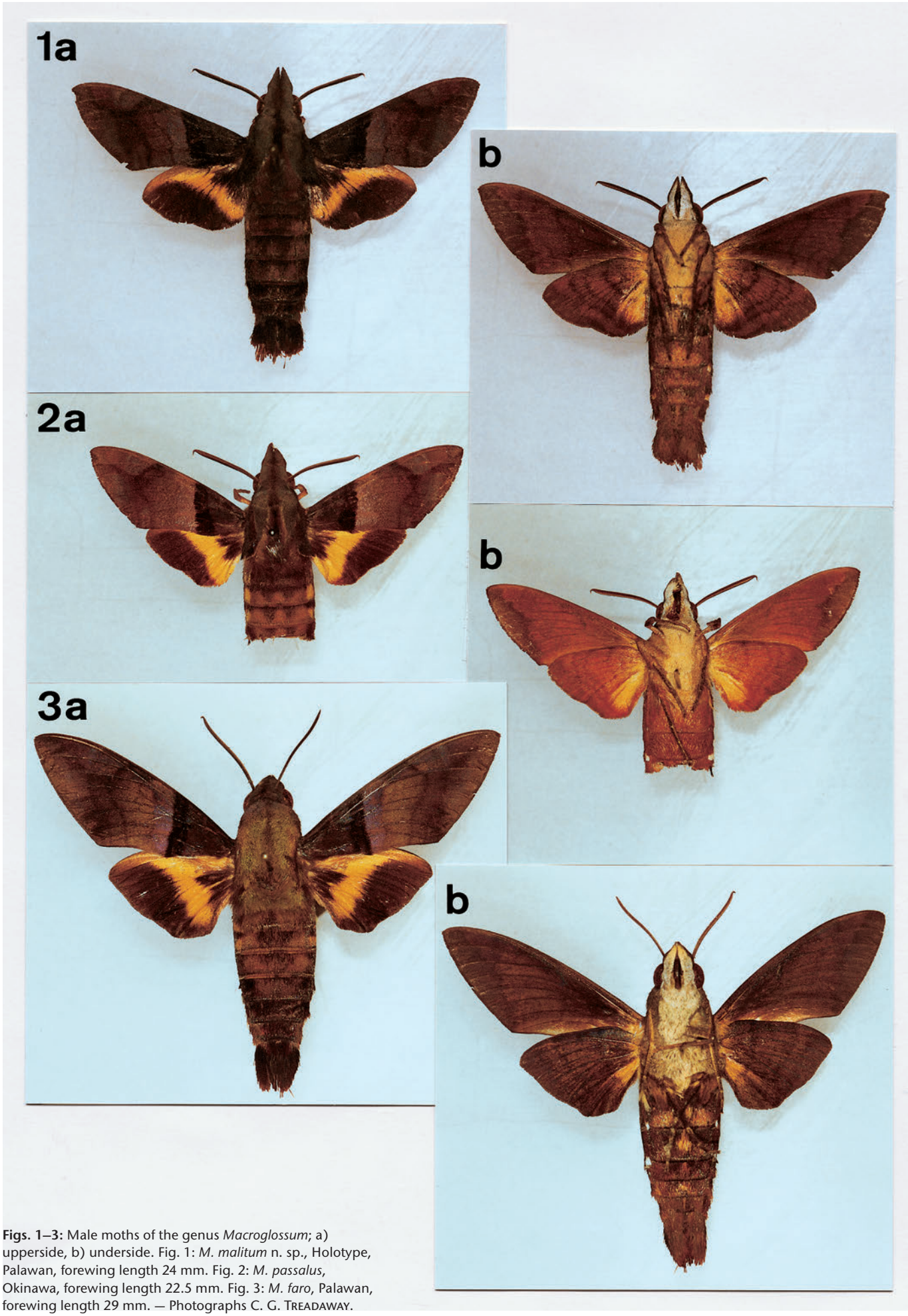

Figs. 1–3: Male moths of the genus *Macroglossum*; a) upperside, b) underside. Fig. 1: *M. malitum* n. sp., Holotype, Palawan, forewing length 24 mm. Fig. 2: *M. passalus*, Okinawa, forewing length 22.5 mm. Fig. 3: *M. faro*, Palawan, forewing length 29 mm. — Photographs C. G. Treadaway.

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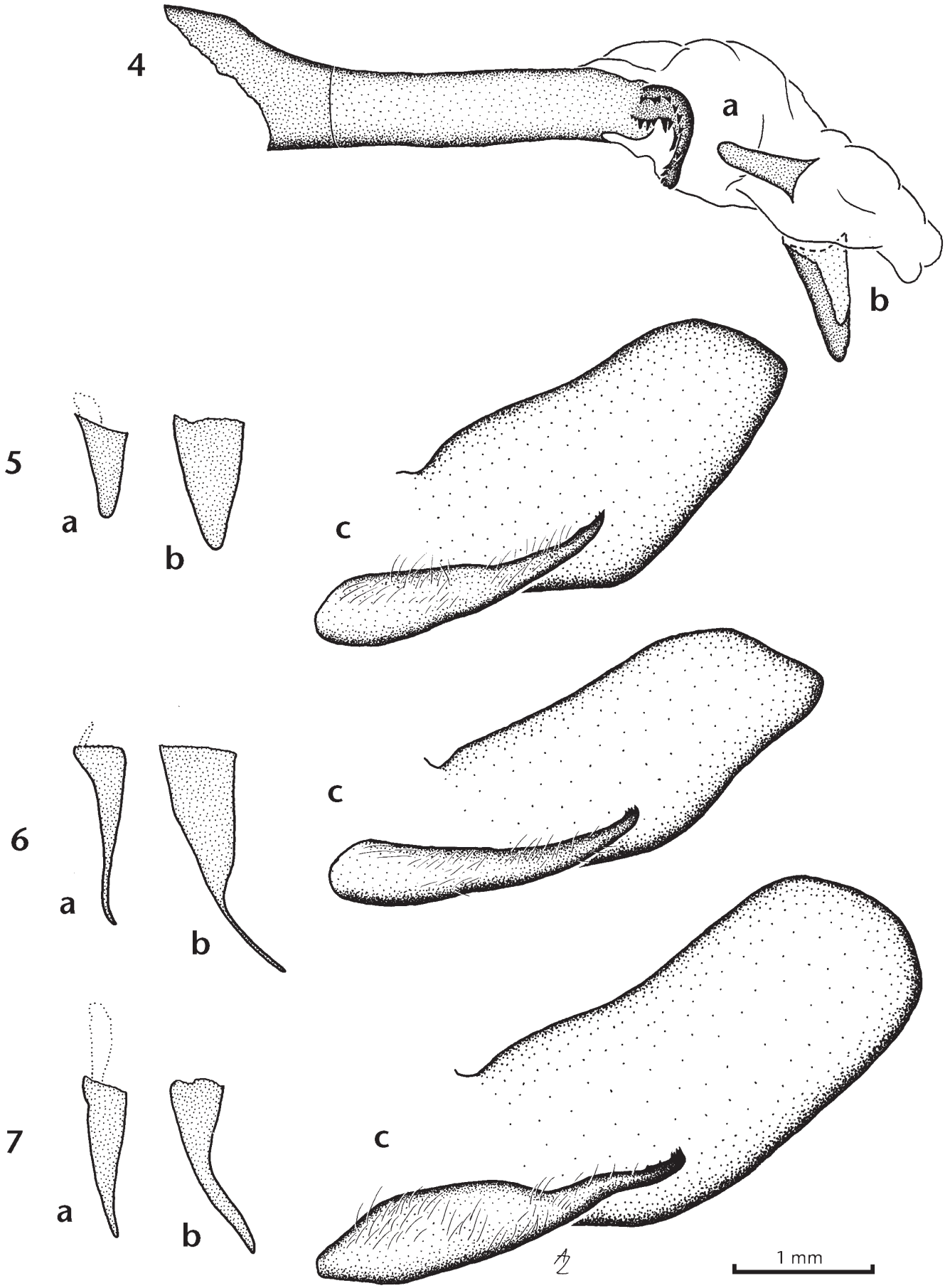

Figs. 4–7: Male genitalia structures of *Macroglossum* spp.; a) basal cornutus of vesica, b) distal cornutus of vesica, c) inner side of right valva with sacculus ("harpe"). Fig. 4: *M. malitus* n. sp., Palawan, aedeagus and vesica with cornuti (genitalia preparation CCGT/AZ 135). Fig. 5: *M. malitus* n. sp., Palawan (CCGT/AZ 135). Fig. 6: *M. passalus*, Okinawa (CCGT/AZ 133). Fig. 7: *M. faro*, Palawan (CCGT/AZ 134). — Scale represents 1 mm. Drawings A. Zwick.

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sclerotized, separate sacculus ("harpe" of other authors); vinculum forming a broad saccus; aedeagus with an apical, bent process covered with teeth; vesica with two cornuti.

The valva is broad and stout, slightly narrowing distally and with a bend in its otherwhise straight to slightly convex ventral edge. Its sacculus is stick-shaped, slightly curving dorsad, narrowing gradually and forming a pointed tip, which sometimes carries a few tiny spines at its dorsal edge (variable even between the two sacculi of one specimen). The cornuti of the vesica are hollow, flat, triangular lobes with a blunt, rounded tip, the more apical cornutus being larger and more stout. On the dorsal side of the more basal cornutus a weakly sclerotized lobe stretches from its basal edge onto the vesica (indicated by a dotted line in the illustrations).

Diagnosis

The dark basal area of the forewing together with the black antemedian band, initially gives the impression of a solid black basal third of the forewing. Visually, this feature together with the general appearance described above distinguishes this new species from most other *Macroglossum* species, except for *M. passalus* (Fig. 2) and *M. faro* (Fig. 3). Compared to *M. faro* (av. FWL 30 mm in the Philippines), this new species is smaller (av. FWL 25 mm) and has a straight rather than concave outer edge of the forewing black antemedian band. Further, for *M. faro* the dorsum of thorax and abdomen has a greenish tint, absent in this new species. Typical specimens of *M. passalus* have next to the antemedian band a noticeably pale median area, which gradually darkens towards the termen, while the median band is less contrasting in specimens of this new species. Additionally, the underside base colour of the wings is, for typical *M. passalus*, of a much lighter reddish brown than for this new species.

The only reliable way to separate *M. faro* and in particular *M. passalus* from this new species is through the male genitalia structures, which are strikingly different for all three species (Figs. 4–7). In this new species the cornuti of the vesica are stout triangles with a blunt tip, about twice as long as wide. In contrast, in *M. passalus* as well as in *M. faro* the cornuti are elongate triangles with very pointed to band-shaped tips, more than three times as long as wide and most extremely elongated in *M. passalus*, where the more apical cornutus narrows down to a long, inwardly curved band. Additionally in *M. faro* dorsal and ventral edge of the valva are roughly parallel, while the edges of the valva converge distad in this new species as well as in *M. passalus*. Still this new species differes in the shape of its valvae from *M. passalus* by having a more stout valva with a convex ventral edge, compared to the concave and more evenly rounded ventral edge of the valva in *M. passalus*. While the distal part of the sacculus is flexed ventrad in *M. faro*, it curves slightly dorsad in this new species as well as in *M. passalus*. The tip of the sacculus is rather blunt and carries several small spines in *M. passalus* and even small, strong teeth in *M. faro*, compared to the pointed tip with no to very few tiny spines in the new species. However, these differences in the tip of the sacculus are not as distinct as the other characters described above and due to variation not reliable.

Distribution

So far found only in the forested mountainous areas of S. Palawan, Philippines (700–950 m).

Discussion

The distributional range of *M. passalus* stated in literature (Inoue et al. 1997, Hogenes & Treadaway 1998, Kitching & Cadiou 2000) is very wide (India to Japan and south to Java) and includes the Philippines. These Philippine records are based on an old literature record by Semper (1896), which proved to be erroneous (Rothschild & Jordan 1903, Kitching pers. comm.). So far we did not see any specimens of *M. passalus* from the Philippines ourselves, including in the Semper material in SMFL. *M. passalus* should therefore, in spite of Semper's listing, for safety reasons be deleted from the list of the Sphingidae occurring on the Philippines until its presence will be proven.

A dark subspecies, *M. passalus rectifascia* (R. Felder, [1874]), was described from Sri Lanka as *Rhamphoschisma rectifascia* and later synomized with the nominate subspecies by Inoue et al. (1997) on the basis of visual similarity and variation of *M. passalus*, without examination of genitalia structures of Sri Lankan specimens. Examination of the ♀ holotype of *R. rectifascia* in the BMNH as well as of the genitalia structures of a dark ♂ specimen from southern India originally identified as *M. passalus rectifascia* showed that these specimens are not conspecific with this new species.

New records

The species listed below have now been newly recorded as occurring on the following islands:

Daphnusa ocellaris Walker, 1856: Panay

Sataspes tagalica (Boisduval, [1875]): Leyte

Meganoton nyctiphanes (Walker, 1856): Panay

Psilogramma m. menephron (Cramer, 1780): Mapun*

Daphnis h. hypothous (Cramer, 1780): Mapun*

Daphnis vriesi Hogenes & Treadaway: 1993: Leyte

Lepchina falcata (Hayes, 1963)**: Palawan

Eupanacra busiris schuetzi Hogenes & Treadaway, 1996: Luzon, Panay

Angonyx testacea (Walker, 1856): Cebu, Panay

Macroglossum malitum Zwick & Treadaway, 2001: Palawan

Macroglossum h. heliophila Boisduval, [1875]: Leyte

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Macroglossum arimasi Hogenes & Treadaway, 1993: Mindoro

Macroglossum mediovitta Rothschild & Jordan, 1903: Mindanao

Macroglossum p. prometheus Boisduval, [1875]: Cebu

Macroglossum aquila Boisduval, [1875]: Leyte, Negros

Macroglossum corythus luteata Butler, 1875: Camiguin de Mindanao

Macroglossum multifascia Rothschild & Jordan, 1903: Mindoro

Macroglossum faro (Cramer, 1780): Samar

Hippotion echeclus (Boisduval, [1875]): Palawan

Hippotion boerhaviae (Fabricius, 1775): Mapun*

Theretra nessus (Drury, [1773]): Mapun*

Theretra c. clotho (Drury, [1773]): Mapun*

Theretra latreillii lucasii (Walker, 1856): Mapun*

Notes:

* Mapun was previously known as Cagayan de Sulu (7°00′N, 118°30′E).

** This species, previously placed in *Gehlenia* Bryk, 1944 and listed as occurring in the Philippines by D'Abrera (1986), can now, in contrary to Hogenes & Treadaway (1998), be positively recorded from Palawan.

Acknowledgments

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